

74.0673

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW CRAWFISH FROM THE HATCHIE RIVER
IN MISSISSIPPI AND TENNESSEE
(DECAPODA, ASTACIDAE)

BY GEORGE HENRY PENN¹

*Department of Zoology,
Tulane University, New Orleans*

The species described here belongs to the *Spiculifer* group of the genus *Procambarus*. The first specimen, a female, was collected in 1955; subsequent visits to the Hatchie River in 1956 and 1960 added only six additional specimens. The Hatchie originates in northeastern Mississippi and flows roughly in a northwesterly direction across southwestern Tennessee before emptying into the Mississippi River about 30 miles north of Memphis. The timber of most of this area was cut long ago and the land heavily farmed thereafter. As a result of this exploitation, soil erosion was serious and most of the streams and small rivers are laden with silt, making conditions unfavorable for many forms of aquatic life. At most of the potential collecting sites no crawfishes were found despite vigorous efforts on the part of two graduate students and myself. At other sites the total yield was sparse to say the least.

I am indebted to Messrs. Joe B. Black and Joseph F. Fitzpatrick, Jr., for their efforts in the field. This investigation was supported by research grants from the National Science Foundation (Nos. G-947 and G-2330).

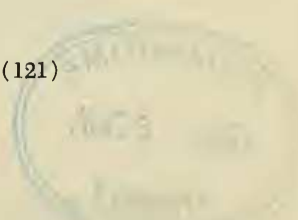
***Procambarus ablusus*, new species²**

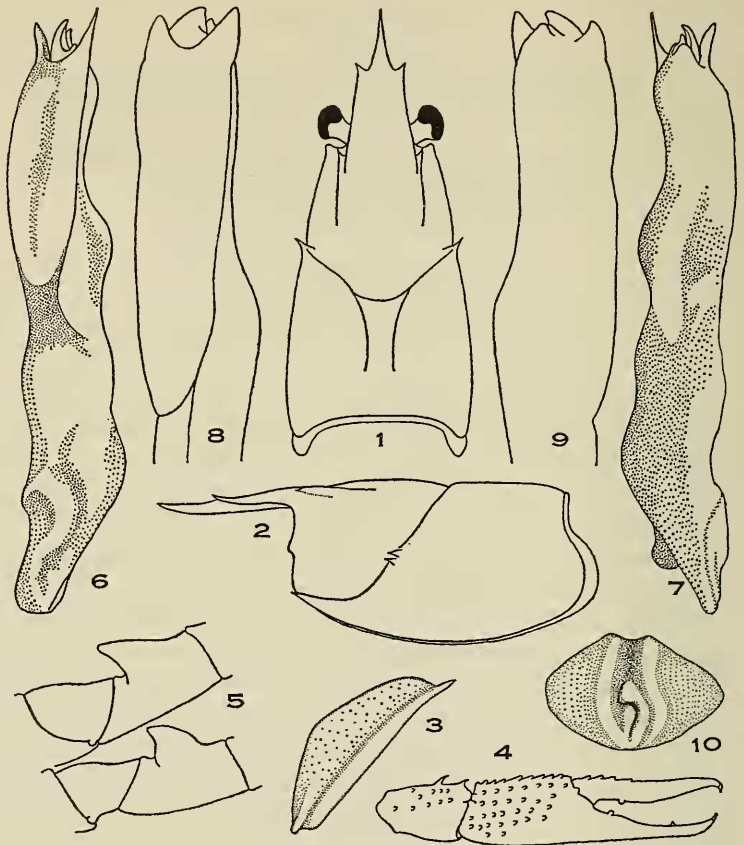
Holotype, male form 1: Cephalothorax (Figs. 1, 2) subovate; greatest width of cephalothorax just posterior to midpoint of areola; greatest height of cephalothorax at anterior end of areola. Abdomen narrower than and slightly longer than cephalothorax.

Areola broad, nearly four times longer than wide at its narrowest width where there are three punctations. Cephalic portion of cephalo-

¹ We regret to report the death of Dr. Penn on 10 May 1963. *Ed.*

² *ablusus*, L. = different.





FIGS. 1-10. *Procambarus ablusus*, new species. 1, 2, Dorsal and lateral views of cephalothorax of holotype; 3, Antennal scale of holotype; 4, Chela and carpus of holotype; 5, Hooks on ischiopodites of third and fourth pereopods of holotype; 6, 7, Mesial and lateral views of first pleopod of morphotype; 8, 9, Mesial and lateral views of first pleopod of morphotype; 10, Annulus ventralis of allotype. Pubescence removed from all structures illustrated; not drawn to same scale.

thorax a little more than twice as long as areola; length of areola less than one-third (29%) of total length of cephalothorax.

Rostrum with acute lateral spines. Rostrum widest at its base; margins raised, slightly sinuous, and converging anteriorly; no median carina. Acumen long; its length about 46 per cent of total length of rostrum.

Postorbital ridges well developed, each terminating cephalad in an acute spine. Branchiostegal spine small, acute. Cervical groove interrupted laterally; two conspicuous acute spines on each side at point of

interruption. Epistome slightly wider than long, terminating in an acute spine anteriorly.

Antennules of usual form, with a prominent acute spine on ventral side of basal segment. Antennae reaching beyond tip of telson. Antennal scale (Fig. 3) extending beyond tip of rostrum; lateral margin straight, terminating in an acute spine; lamellar portion of scale flat, fringed with long hairs from base to apex; greatest width of scale just proximal to middle; length about three times greatest width.

Cephalic section of telson with two spines in right and one spine in left caudolateral corners.

Chela (Fig. 4) ovoid in cross-section, long, and slender; a row of eight tubercles along inner margin of palm; smaller, flat tubercles in four to five irregular longitudinal rows on upper face of palm. Both fingers terminating in short, corneous tips bent toward each other. Occluding portions of fingers curved so they meet when dactyl is flexed; dactyl with four acute tubercles on inner margin and one large rounded tooth on opposable (outer) margin near base; opposable margin of immovable finger with one large rounded tooth proximally, and one conical tooth about one-third of distance from apex. Fingers long; dactyl about 56 per cent of total length of the outer margin of chela. Ischiopodites of first pereopods each with four spines on inner margin; basipodites without spines. Carpus (Fig. 4) ovoid in cross-section; with two prominent acute tubercles near distal end on inner margin; a few flat tubercles between inner margin and longitudinal groove.

Hooks on ischiopodites (Fig. 5) of third and fourth pereopods; approximately equal in size; length of each slightly less than half the width of its ischiopodite. Coxopodites of fourth and fifth pereopods with caudomesial projections; projection of fourth inflated, that on fifth smaller and forming a somewhat oblique cephalomesial-caudolateral ridge.

First pleopod (Figs. 6, 7) extending to anterior edge of the coxopodite of the third pereopod when abdomen is flexed. Pleopods essentially straight; apical parts not bent. Appendage terminating in four distinct parts projecting distally. Mesial process spiculiform, noncorneous, and directed distad. Cephalic process slightly excavate caudally, lying cephalolaterad of central projection and extending distad. Caudal element consisting of three parts: caudal knob noncorneous, prominent, rounded at apex; caudal process corneous, acute, lying between central projection and caudal knob, directed distad; accessory process a thin corneous transverse ridge caudad of caudal process. Central projection corneous, rounded and somewhat hooked caudally at distal end, fusion line of its component parts clearly marked.

Morphotype male, form II: In most respects similar to the holotype; chelae and hooks on ischiopodites reduced; caudomesial process on fourth coxopodite undeveloped, that on fifth coxopodite pronounced; ischiopodites of first pereopods with two spines on right, three on left. First pleopods (Figs. 8, 9) reach to anterior edge of coxopodites of fourth

pereiopods when abdomen is flexed; all processes reduced and noncorneous, but caudal knob remains prominent.

Allotype female: Similar to holotype in most respects; chelae reduced; ischiopodites of first pereiopods each with three spines; left side of cephalothorax with three lateral spines. Annulus ventralis (Fig. 10) movable, about one and one-half times longer than wide, with anteromedian depression delineated laterally by strong ridges that run posteriorly and diverge around a posteriorly placed protuberance; sinus originates in anterior depression near the midline, then proceeds caudodextrad to caudal protuberance, turns sinistrad a short distance, and then caudad to its terminus near caudal margin. Sternum of fourth thoracic segment not produced and nontuberculate.

Measurements: Data from the types are given (in mm) in the following table.

	HOLOTYPE	MORPHOTYPE	ALLOTYPE
Cephalothorax:			
Length	34.0	28.5	39.0
Width (greatest)	15.0	12.0	17.0
Height (greatest)	14.0	11.0	16.0
Areola:			
Length	9.8	7.8	10.5
Width (at narrowest point)	2.5	2.3	2.5
Rostrum:			
Length	12.0	11.0	14.0
Width at base	5.0	4.3	6.0
Length of acumen	5.5	5.1	5.0
Antennal scale:			
Length	11.0	10.2	12.0
Width	3.6	3.4	4.5
Epistome:			
Length	2.0	1.5	1.7
Width	2.4	2.0	2.5
First pleopod (males only):			
Length	9.4	6.4	—
Abdomen:			
Length (to tip of telson)	36.0	30.0	41.0
Right chela:			
Length of outer margin	21.5	12.0	20.0*
Length of dactyl	12.0	7.2	10.5
Width of palm	6.0	3.3	6.0
Thickness of palm (greatest)	4.7	2.5	4.5

*Dactyl broken on right chela; measurements for left chela.

Type locality: The holotype and morphotype were collected from Hatchie River, 12.1 miles E of Ripley (State hwy. 4), Tippah County, Mississippi, 12 July 1956 by the writer and Joe B. Black. Crawfish associates included only *Orconectes immunis*. The allotype was collected from Hatchie River, 1.5 miles NE of Bolivar (State hwy. 18), Hardeman County, Tennessee, 17 September 1955 by Leslie Hubricht.

Disposition of types: The holotype, morphotype, and allotype are deposited in the U.S. National Museum, numbers 108200, 108201, and 108202, respectively. The four paratypes are in the Tulane University collection as follows: one ♂ II, tributary to Hatchie River, 3 miles N of Biggersville (U.S. hwy. 45), Alcorn County, Mississippi, 12 July 1956, G. H. Penn and J. B. Black (TU 3463); one ♂ juv. and one ♀ juv., Hatchie River, 1.5 miles NE of Bolivar, Hardeman County, Tennessee, 8 September 1960, J. F. Fitzpatrick (TU 3641); and, one ♂ juv., tributary to Hatchie River, 2.5 miles N of Biggersville, Alcorn County, Mississippi, 8 September 1960, J. F. Fitzpatrick (TU 3642).

Relationships: This makes the eleventh species to be described in the *Spiculifer* group of the *Blandingii* section of *Procambarus*. Hobbs (1962) recently stated his interpretations of the relationships within the group. On the basis of the structure of the first pleopod of the form I male, *P. ablusus* appears to be most closely related to *P. penni* Hobbs, although its closest geographic neighbor is *P. vioscai* Penn.

LITERATURE CITED

- Hobbs, Horton H., Jr. 1962. Notes on the affinities of the members of the *Blandingii* section of the crayfish genus *Procambarus*. Tulane Stud. Zool., 9 (5): 273-293.